

MAR 05 2004

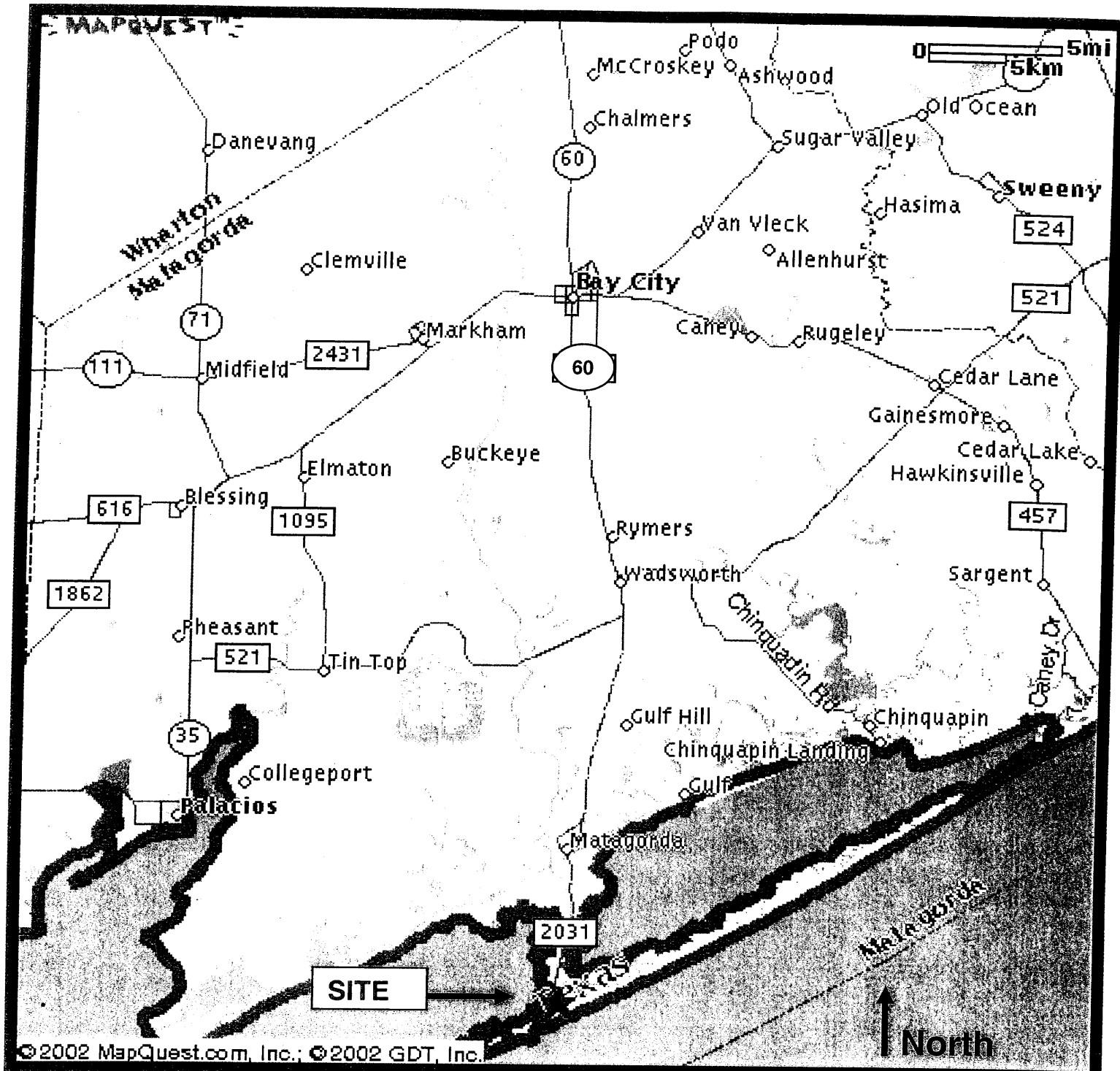
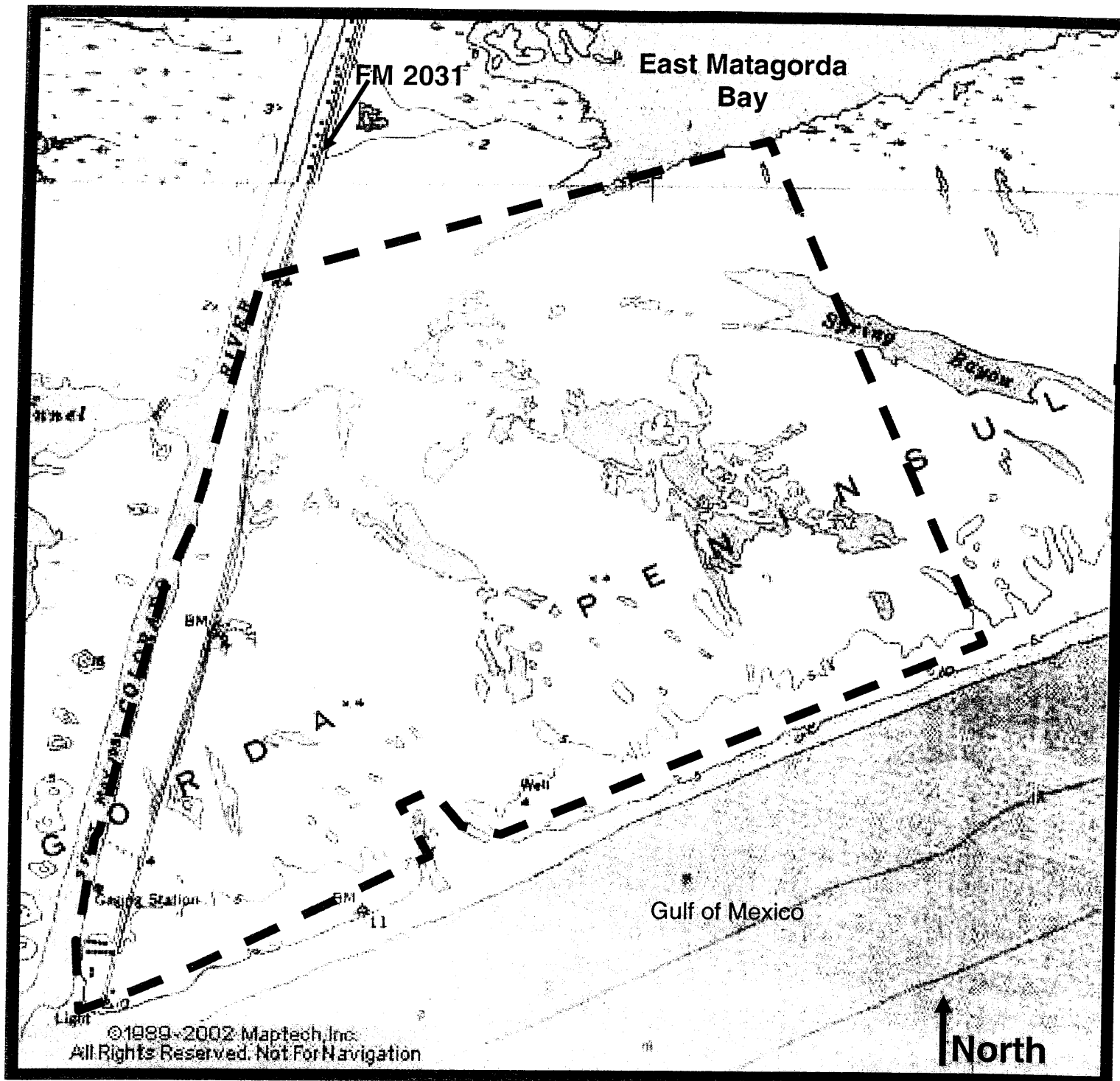


FIGURE 1
LOCATION MAP

Lower Colorado River Authority
Matagorda Bay Nature Park

January 2004

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Property Boundary

Scale: 1"= approx. 1,700'

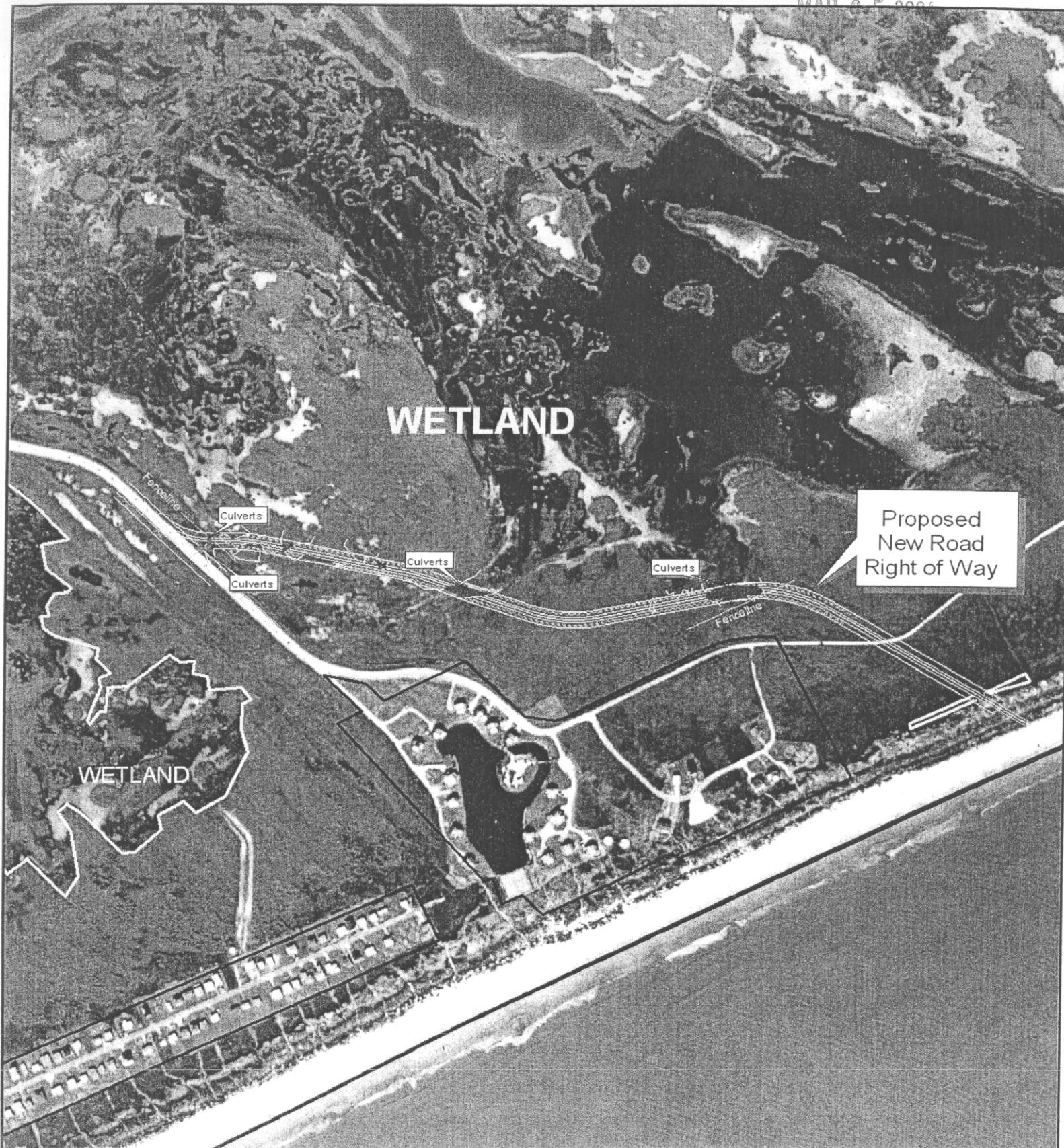
Matagorda SW, Texas Quad.

FIGURE 2
TOPOGRAPHIC MAP

Lower Colorado River Authority
Matagorda Bay Nature Park

January, 2004





Wetland within ROW = 0.75 acre

Proposed locations of culverts

Approx. location of roadside drainage swales

Property Line

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Base imagery flown ~1996

Figure 5
Wetlands impacted by
Proposed Beach Access Road
LCRA
Matagorda Bay Nature Park
300 0 300 600 Feet



APR 28 2004



Culvert

80' ROW*

80' ROW*

Map 1: Wetlands Impact Analysis

Proposed Beach Access Road
LCRA Matagorda Bay Nature Park

Total jurisdictional wetlands within 80-foot ROW: 1.72 acres

Total wetlands to be filled: 0.92 acre

Wetlands to be created in ROW: 0.64 acre


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LOWER COLORADO RIVER AUTHORITY

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Wetlands

 Filled

 Created

 Non-impacted

0 50 ft.

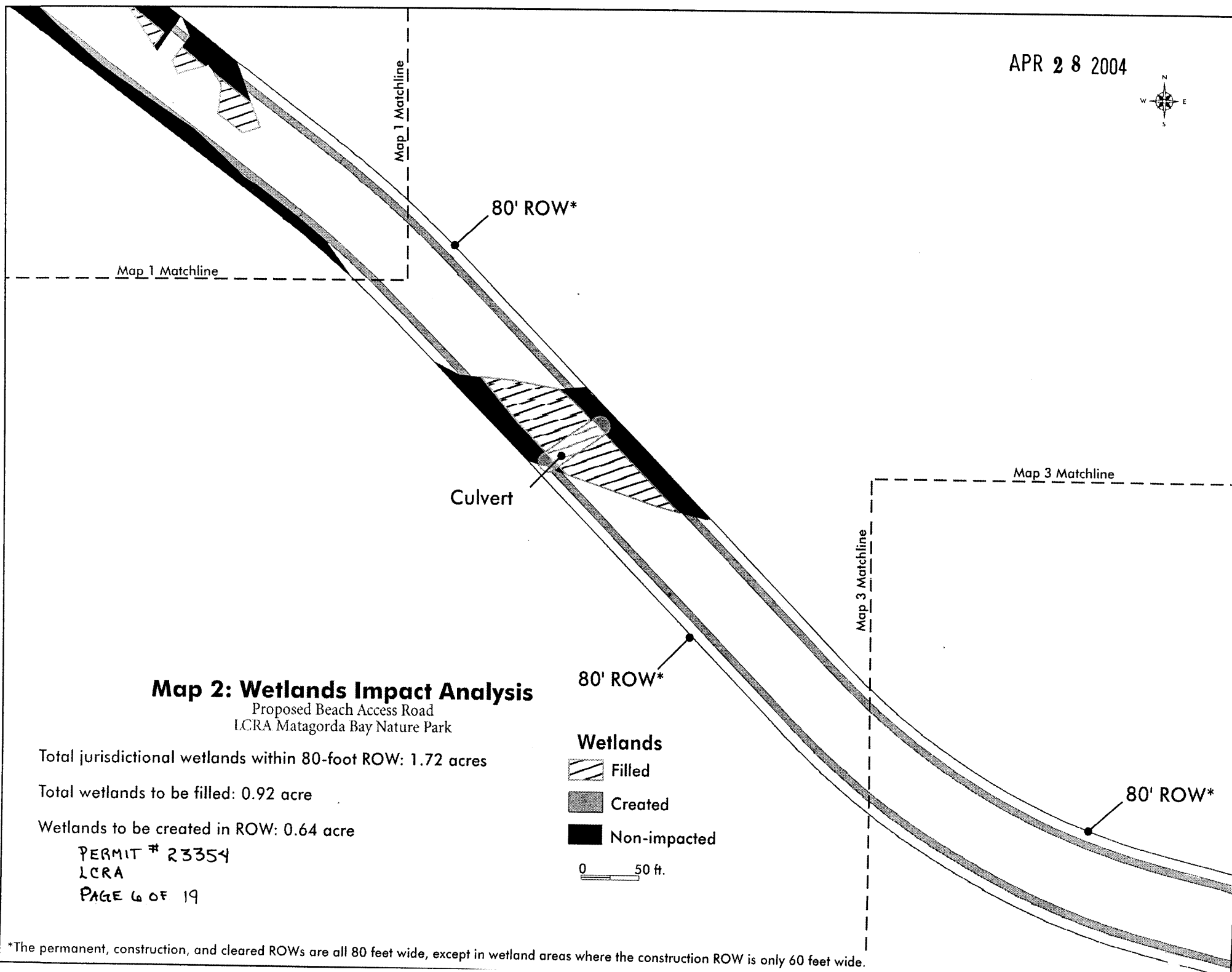
Map 2 Matchline

80' ROW*

Map 2 Matchline

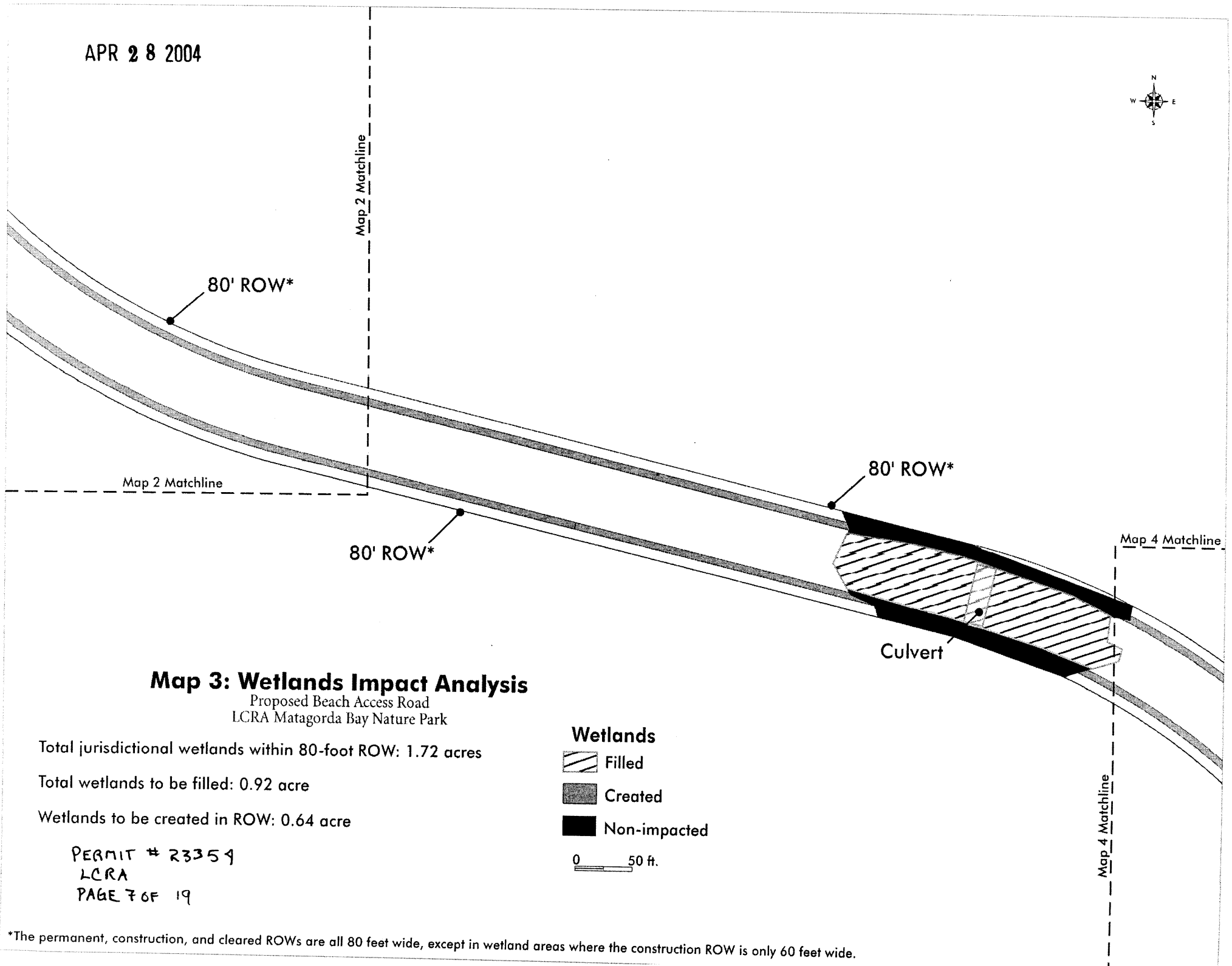
*The permanent, construction, and cleared ROWs are all 80 feet wide, except in wetland areas where the construction ROW is only 60 feet wide.

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Map 3 Matchline

Map 3 Matchline

80' ROW*

80' ROW*

80' ROW*

Map 4: Wetlands Impact Analysis

Proposed Beach Access Road
LCRA Matagorda Bay Nature Park


Total jurisdictional wetlands within 80-foot ROW: 1.72 acres


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 Created

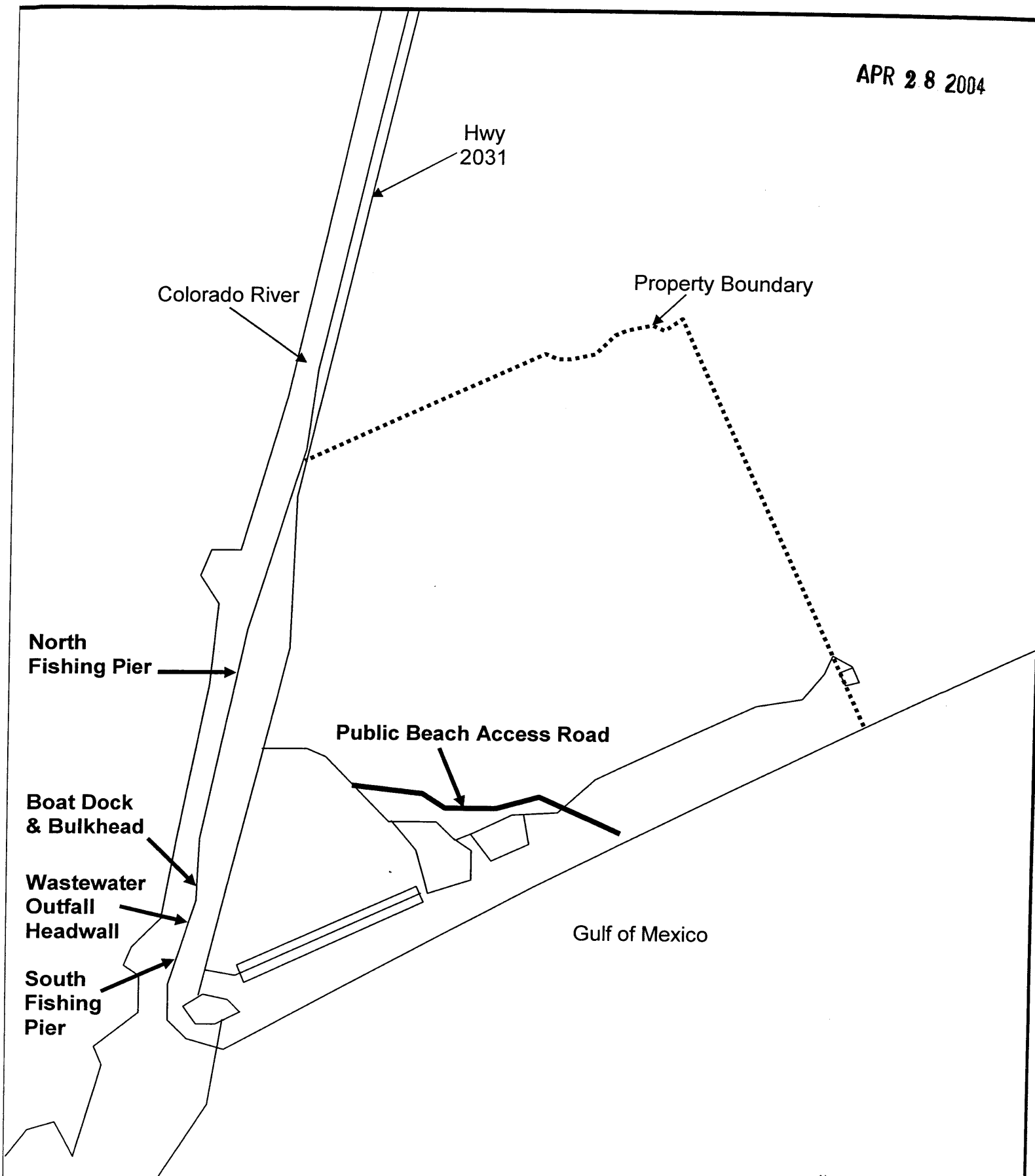
 Non-impacted

0 50 ft.

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*The permanent, construction, and cleared ROWs are all 80 feet wide, except in wetland areas where the construction ROW is only 60 feet wide.

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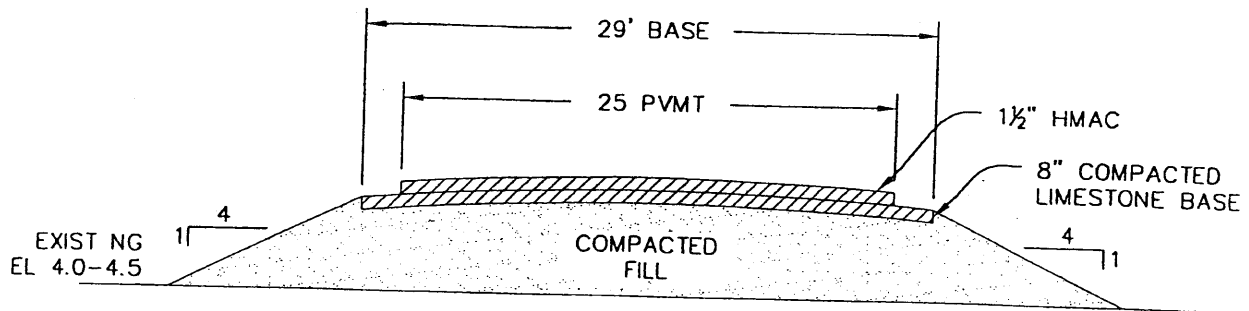


Proposed Actions
Lower Colorado River Authority
Matagorda Bay Nature Park

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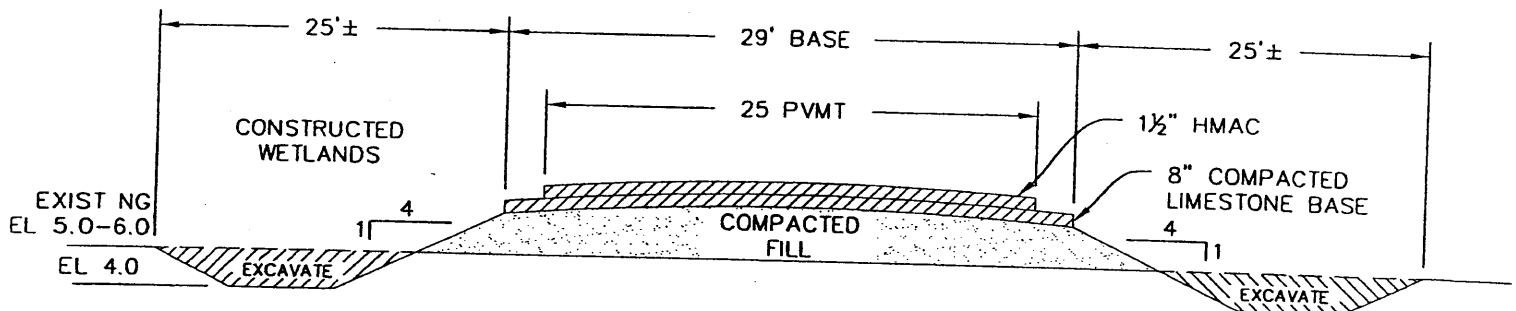
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NOTE:
ALTERNATE TO 8" LIMESTONE BASE
IS 10" ASPHALT STABILIZED SAND.

ROAD SECTION THRU WETLAND



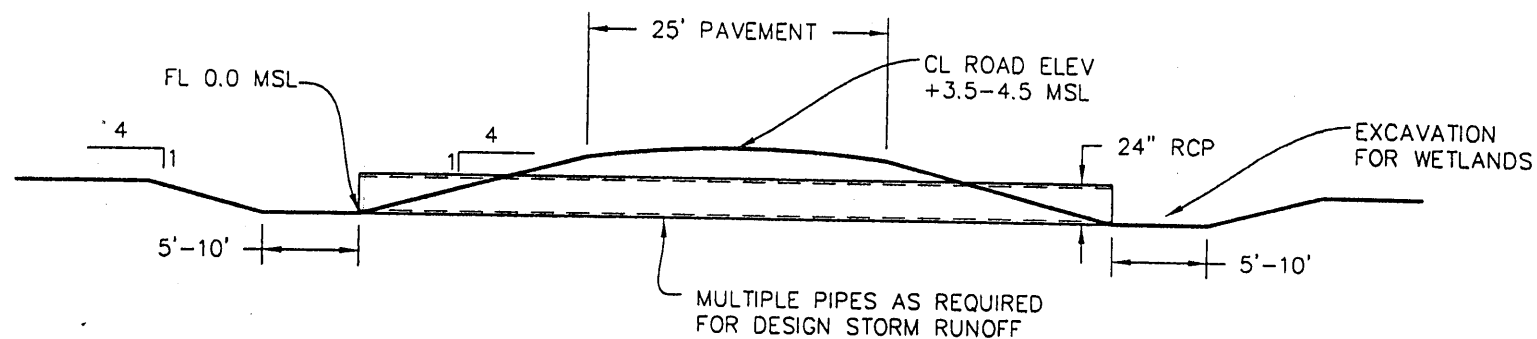
NOTE:
ALTERNATE TO 8" LIMESTONE BASE
IS 10" ASPHALT STABILIZED SAND.

ROAD SECTION THRU UPLAND WITH CONSTRUCTED WETLAND

FIGURE 6
TYPICAL ROAD SECTIONS

Proposed Beach Access Road
LCRA
Matagorda Bay Nature Park

January 2004



TYPICAL CULVERT INSTALLATION

FIGURE 7
TYPICAL CULVERT

Proposed Beach Access Road
LCRA
Matagorda Bay Nature Park

January 2004

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Wetland (USACE Verification Letter - July 17, 2002)
Channel Vegetation Line



Property Line

WWTP Site and Discharge Line
(WWTP to be sited within orange circle)



WW Outfall Structure

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Base imagery flown ~1996

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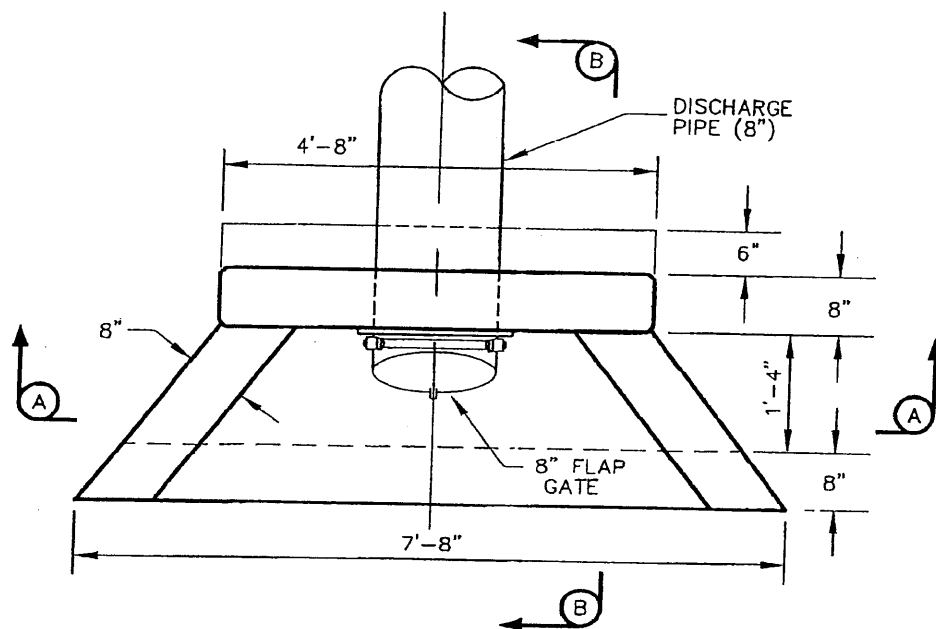


Figure 8
Wastewater Outfall Structure
LCRA
Matagorda Bay Nature Park

300 0 300 600 Feet

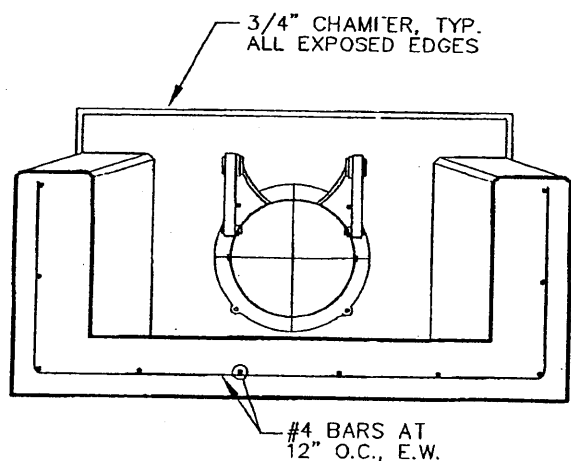


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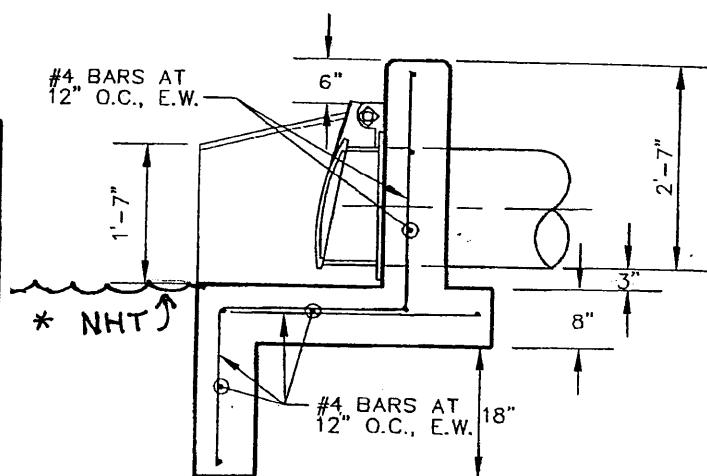


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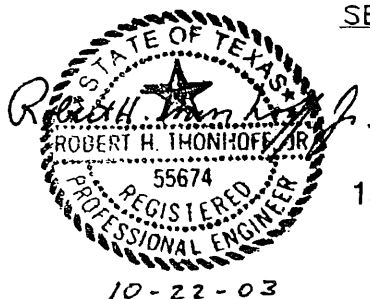
1. TOP OF SLAB ELEVATION TO BE SET ABOVE NORMAL HIGH TIDE ELEVATION IN COLORADO RIVER TIDALLY AFFECTED WATER



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.



15 CY of fill below NHT

FIGURE 9
Wastewater Outfall Structure
LCRA
Matagorda Bay Nature Park
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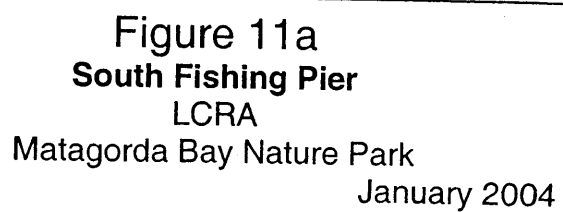
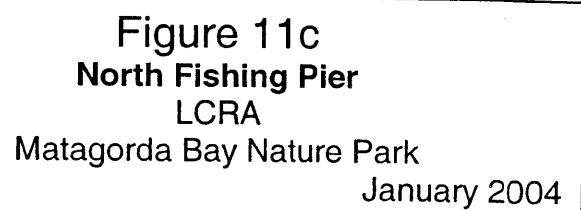
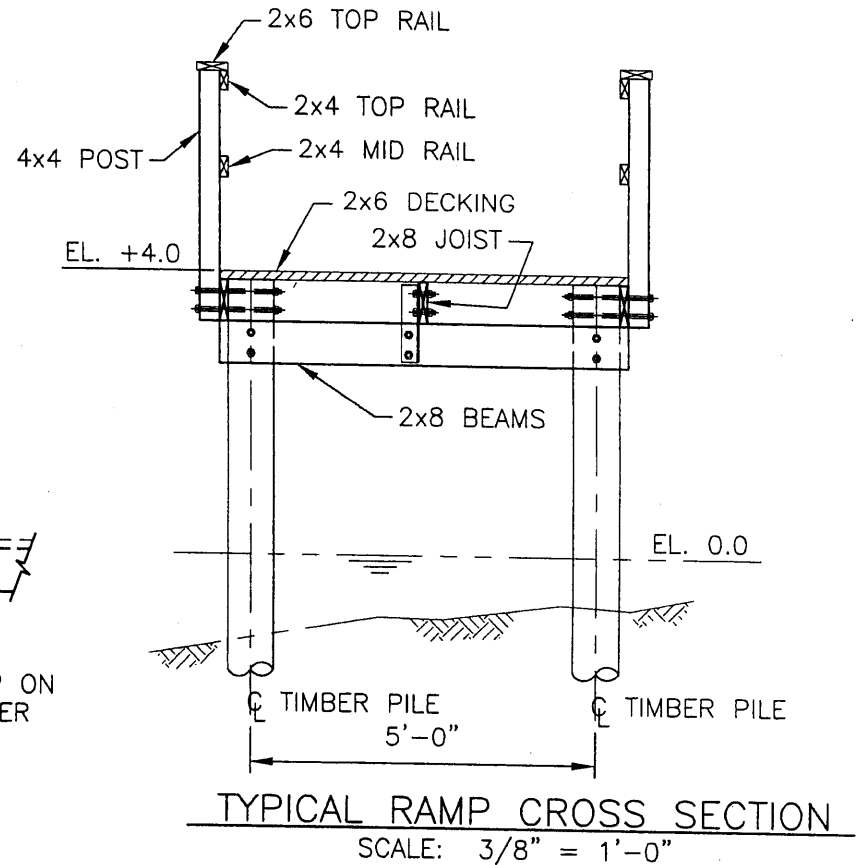
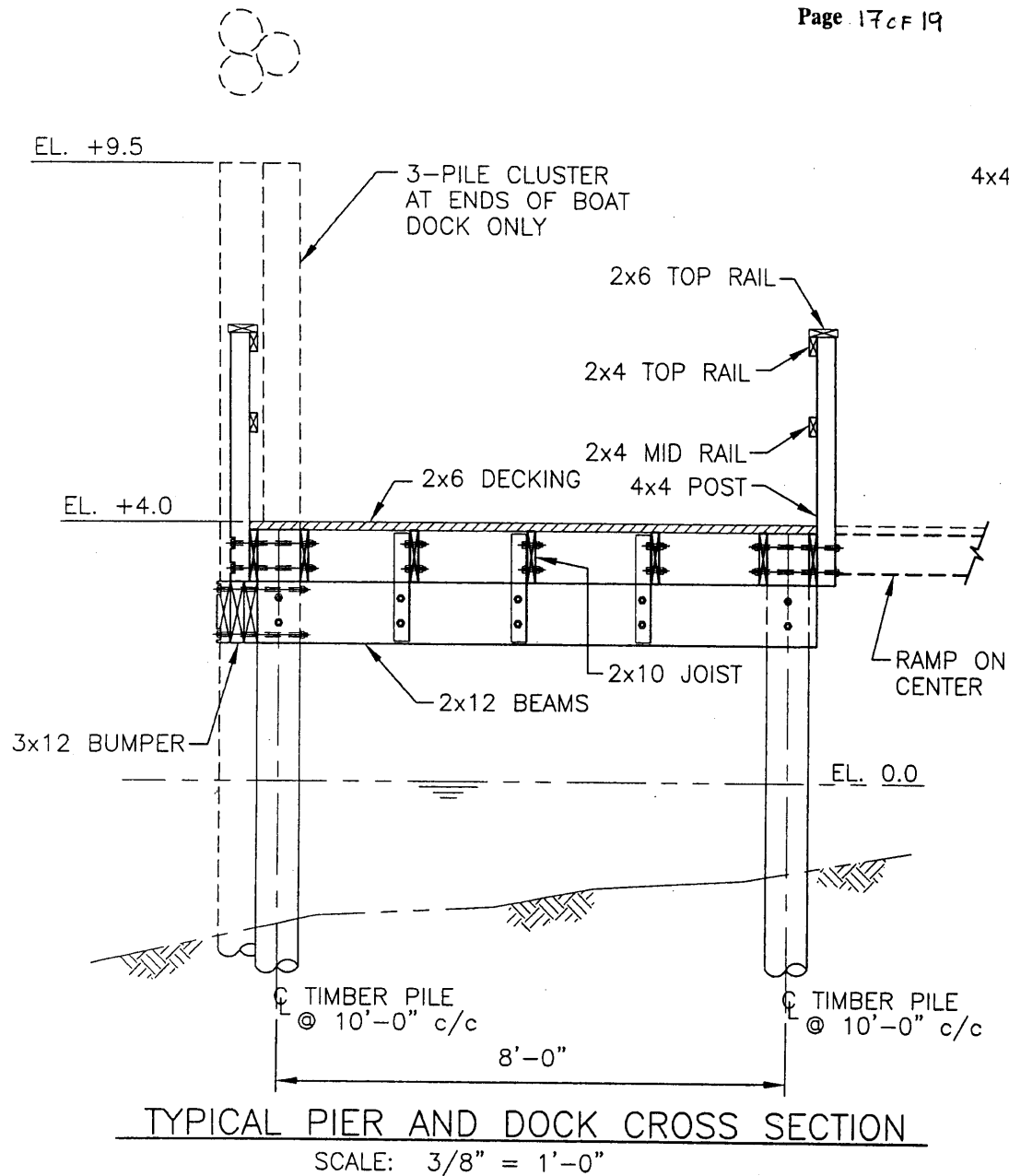


Figure 11b
Boat Dock and Bulkhead
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Matagorda Bay Nature Park
January 2004





DATUM = NAVD 88

Figure 12
Plan and Profile of Pier Structure
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January 2004

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Unavoidable Impacts to waters of the United States

The proposed improvements at the Matagorda Nature Park will unavoidably impact **0.92 acre of wetlands and will place 68 cubic yards of fill** below MHW in Section 10 waters (old river channel).

Mitigation

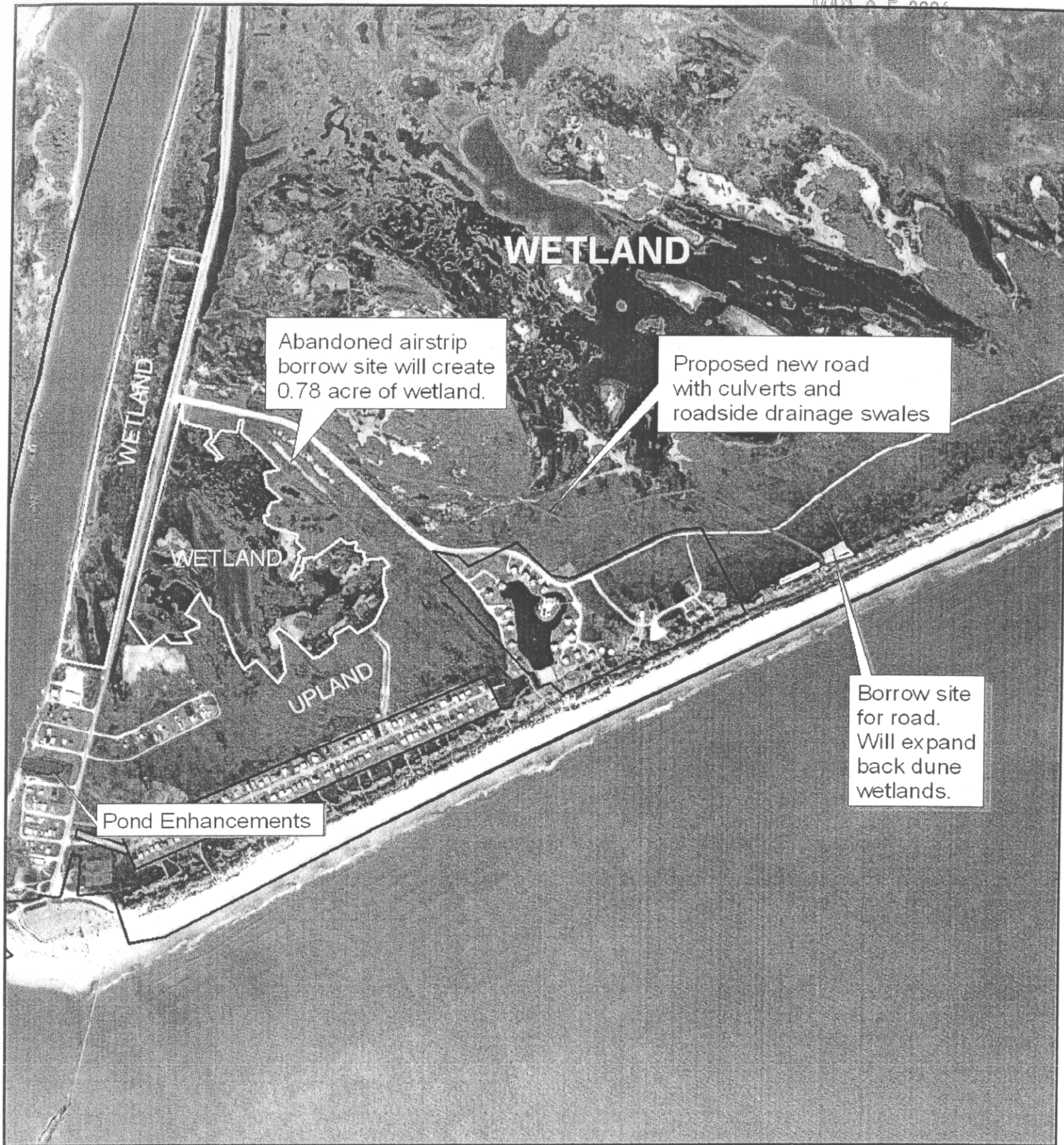
Sequencing - Avoidance, Minimization, and Compensation regarding impacts to jurisdictional areas - was considered during every phase of the planning process. Mitigation for unavoidable impacts includes Preservation, Enhancement and Creation of on-site, in-like-kind jurisdictional areas. **See Figure 13 for locations of mitigation areas.**

- **Preservation** of approximately 1,200 acres of coastal marsh. The coastal marsh is a vast matrix of tidal channels lined with *Spartina alterniflora*, *Salicornia* flats, and intermixed with mud, sand and algal flats. In some areas upland hummocks intersperse the marsh.
- **Enhancement** of the entire tract has begun by restricting access to cattle grazing. Decades of grazing and livestock wanderings have impacted the sensitive marsh fringes and limited the growth of some native plant species. In the twelve months without livestock impacts, the marsh and associated coastal grasslands are healing and the vegetation is making a comeback.
- **Enhancement** of the pond adjacent to the river channel will consist of widening the hydrologic connection between the pond and the channel to approximately 4 feet wide. This connection has narrowed to a few inches and become vegetated. A monoculture of *Phragmites* will be removed from the south and east banks of the pond. A wooden and concrete bulkhead on the south edge of the pond will be assessed for possible removal.
- **Enhancement** of the tract adjacent to the river channel and to water quality in the channel includes:
 - Removal and proper disposal of six relict piers - completed in October 2003
 - Removal of non-compliant septic systems
 - Removal and proper disposal of several truckloads of debris from the channel's edge and the pond
- **Creation** of 0.64 acre of in-like kind, on-site wetlands will be realized in the construction of the roadside drainage swales that will parallel the new road in the upland areas. The road will be culverted in the wetland areas to maintain hydrologic connections and reduce impacts to wetlands.
- **Creation** of 0.01 acre of backdune wetlands will be realized when fill for the new road is procured from an upland area adjacent to the 0.01 acre of backdune wetland being impacted by the road.
- **Creation** of 0.78 acre of wetlands will be realized by the expansion of the existing wetlands south of the Matagorda Dunes road. This wetland expansion will be created when fill for the new road is removed from the abandoned airstrip adjacent to the existing wetlands.



The coastal wetlands are tidal flats vegetated primarily with *Salicornia* spp, *Batis maritima*, and *Monanthochloa* and interspersed with sandy areas. The back dune wetlands are narrow swales immediately landward of the dune line and are dominated by *Spartina patens* and *Scirpus maritimus*. The newly created wetland areas will match the grade of and be connected to existing wetlands to ensure tidal and hydrologic connection. They will be allowed to vegetate naturally.

A total of 1.43 acres of created wetlands for 0.92 acre impacted wetlands = 1.6:1 mitigation ratio.

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Wetland (USACE Verification Letter - July 17, 2002)

-  Property Line
-  Proposed New Road

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Base imagery flown ~1996

Figure 13
Overview of Proposed Mitigation
LCRA
Matagorda Bay Nature Park
500 0 500 1000 Feet

